



# Appendix B

*Federal Register* Notices

(NEPA) of 1969 (42 U.S.C. § 4321 *et seq.*), the Council on Environmental Quality regulations that implement the procedural provisions of NEPA (40 CFR Parts 1500–1508), and the DOE procedures for implementing NEPA (10 CFR Part 1021). DOE invites Federal, State, and local agencies, Native American tribal organizations, and other interested parties to participate in determining the scope and content of the EIS.

The NWPA directs DOE to evaluate the suitability of the Yucca Mountain site in southern Nevada as a potential site for a geologic repository for the disposal of spent nuclear fuel and high-level radioactive waste. If the Secretary of Energy determines that the Yucca Mountain site is suitable, the Secretary may then recommend that the President approve the site for development of a repository. Under the NWPA, any such recommendation shall be considered a major Federal action and must be accompanied by a final environmental impact statement. Accordingly, DOE is preparing this EIS in conjunction with any potential DOE recommendation regarding the development of a repository at Yucca Mountain.

The NWPA provides that the environmental impact statement need not consider the need for a repository, the alternatives to geologic disposal, or alternative sites to the Yucca Mountain site. Therefore, this environmental impact statement will evaluate a proposal to construct, operate, and eventually close a repository at Yucca Mountain. The EIS will evaluate reasonable alternatives for implementing such a proposal in accordance with the NWPA.

The NWPA also provides that the Nuclear Regulatory Commission shall, to the extent practicable, adopt DOE's EIS in connection with any subsequent construction authorization and license that the Commission issues to DOE for a repository. The EIS process is scheduled to be completed in September 2000 and is separate from the licensing process that would be initiated by any submission of a license application by DOE to the Commission in June 2001.

The EIS will be prepared over a five-year period in conjunction with DOE's separate but parallel site suitability evaluation and potential license application. DOE is beginning the EIS process early to ensure that the appropriate data gathering and tests are performed to adequately assess potential environmental impacts, and to allow the public sufficient time to consider this complex program and to provide input.

**DATES:** DOE invites and encourages comments and suggestions on the scope of the EIS to ensure that all relevant environmental issues and reasonable alternatives are addressed. Public scoping meetings are discussed below in the **SUPPLEMENTARY INFORMATION** section. DOE will carefully consider all comments and suggestions received during the 120-day public scoping period that ends on December 5, 1995. Comments and suggestions received after the close of the public scoping period will be considered to the extent practicable.

**ADDRESSES:** Written comments on the scope of this EIS, requests to pre-register to speak at any of the public scoping meetings, questions concerning the proposed action and EIS, or requests for additional information on the EIS, should be directed to: Wendy R. Dixon, EIS Project Manager, Yucca Mountain Site Characterization Office, Office of Civilian Radioactive Waste Management, U.S. Department of Energy, 101 Convention Center Drive Suite P-110, MS 010, Las Vegas, NV 89109, Telephone: 1-800-967-3477, Facsimile: 1-800-967-0739.

**FOR FURTHER INFORMATION CONTACT:** For more information about this EIS, please contact Wendy R. Dixon at the address, above. For information on DOE's NEPA process, please contact: Carol M. Borgstrom, Director, Office of NEPA Policy and Assistance (EH-42), U.S. Department of Energy, 1000 Independence Avenue, S.W., Washington, D.C. 20585, Telephone: 1-202-586-4600 or leave a message at 1-800-472-2756.

#### **SUPPLEMENTARY INFORMATION:**

##### **Public Participation**

All interested persons, including Federal agencies, Native American tribal organizations, State and local government agencies, public interest groups, transportation interests, industry and utility organizations, regulators, and the general public are encouraged to take part in the EIS scoping process. Because of the anticipated public interest and national scope of the program, DOE will provide several methods for people to express their views and provide comments, request additional information and copies of the EIS, or pre-register to speak at the scoping meetings. Comments submitted by any of these means will become part of the official record for scoping.

#### **DEPARTMENT OF ENERGY**

##### **Preparation of an Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada**

**AGENCY:** Department of Energy.

**ACTION:** Notice of intent.

**SUMMARY:** The U.S. Department of Energy (DOE) announces its intent to prepare an environmental impact statement (EIS) for a geologic repository at Yucca Mountain, Nye County, Nevada, for the disposal of spent nuclear fuel and high-level radioactive waste, in accordance with the Nuclear Waste Policy Act of 1982, as amended (NWPA) (42 U.S.C. § 10101 *et seq.*), the National Environmental Policy Act

*Written Comments and Toll-Free Facsimile Number*

Written comments and requests may be mailed or sent by facsimile to Wendy R. Dixon at the address or toll-free facsimile number listed above

*Toll-Free Telephone Line*

All interested parties are invited to record their comments or request information on the scope of the EIS by calling a toll-free telephone number, 1-800-967-3477. Throughout the public scoping period, this number will be staffed between the hours of 9 a.m. to 9 p.m. Eastern Standard Time, Monday through Friday. During other hours, calls will be forwarded to an answering machine.

*Electronic Mail*

Comments and information requests may be submitted by electronic mail to the following Internet electronic mail address: ymp—eisr@notes.ymp.gov.

*Internet*

The public may access the Notice of Intent, request information, and provide comments via the World Wide Web at the following Uniform Resource Locator address: <http://www.ymp.gov>, under the listing *Environmental Impact Statement (EIS)* on the Yucca Mountain Project Home Page. When available, the EIS and other selected technical documents may also be accessed at this Uniform Resource Locator address.

*Scoping Meetings*

DOE will hold 15 public scoping meetings in cities throughout the United States to provide and discuss information and to receive comments on the scope of this EIS. Table 1 at the end of this Notice lists the specific locations, dates, and times for each scoping meeting. Persons wishing to speak at any of these meetings can pre-register up to two days before the meeting by: (1) Calling the toll-free telephone number 1-800-967-3477, (2) writing to Wendy R. Dixon at the address listed above, or (3) sending their request to pre-register by facsimile or electronic mail, as identified above.

Persons wishing to speak who have not registered in advance can register at each meeting. These "walk-in registrants" will be accommodated to the extent practicable, following those persons who have pre-registered. Only one spokesperson per organization, group, or agency may present comments on its behalf. Oral statements will be limited to ten minutes; however, written comments can be of any length and submitted any time during the scoping period.

Each of the 15 public scoping meetings will have either a morning or afternoon session, and an evening session. Morning sessions will begin at 8:30 a.m. and end at 12:30 p.m., and afternoon sessions will begin at 12:00 p.m. and end at 4:00 p.m. Evening sessions will begin at 6:00 p.m. and end about 10:00 p.m. If additional time is required in order to accommodate all speakers wishing to present oral comments, the meeting facilitator will consult with the audience and DOE staff and determine whether to continue the meeting past the scheduled ending time. A court reporter will record all portions of the scoping meetings, and transcripts will be prepared and made a part of the official record of the scoping process.

Each session will have an introductory presentation, a question and answer period, and a public comment segment. A facilitator will begin the introductory presentation of each session by explaining the scoping meeting format. DOE staff will provide a brief description (lasting approximately 30–45 minutes) of the repository program, the EIS, and the scoping process. The question and answer period (lasting approximately 45 minutes) will provide members of the public an opportunity to ask questions and discuss various aspects of the repository and to obtain additional information that may be useful in formulating opinions and comments. Each member of the public will be allowed five minutes to ask questions. The meeting facilitator may allow extra time for additional questions depending on the number of people present who have indicated their desire to participate during the question and answer period. The meeting facilitator will begin the public comment portion of the scoping meeting after the question and answer period. At this time, members of the public will provide their comments on the scope of the EIS.

Each public scoping meeting also will have a separate information room containing exhibits and informational handouts about the repository program and the EIS. DOE and contractor staff will be available throughout the day to answer questions in an informal setting. A table with blank comment cards will also be available for people to privately prepare and submit written comments on the scope of the EIS. These comment cards will be included in the formal record of each scoping meeting.

*Subsequent Document Preparation*

Results of scoping, including the transcripts from the question and answer periods and public comment segments, and all other oral and written

comments received by DOE, will be summarized in the EIS Implementation Plan. This Plan will guide the preparation of the EIS, and will describe the planned scope and content of the EIS, record the results of the scoping process, and contain EIS activity schedules. As a "living document," the Implementation Plan may be amended as needed to incorporate changes in schedules, alternatives, or EIS content.

The Implementation Plan will be available to the public for information purposes as soon as possible after the close of the public scoping process, and before issuing the Draft EIS. The Implementation Plan and the transcripts from the public scoping meetings will be available for inspection at major DOE facilities and public reading rooms in Nevada and across the country, as identified at the end of this Notice. Copies of the Implementation Plan, as well as the Draft and Final EIS and related comments, will be provided to anyone requesting copies of these documents.

Availability of the Draft EIS for public review, and the locations and times of public hearings on the Draft EIS, will be announced in the **Federal Register** and through local media (approximately in the Fall of 1998). After considering all public comments received on the Draft EIS, DOE will prepare and issue a Final EIS, followed thereafter by a Record of Decision (approximately in the Fall of 2000).

**Background**

Spent nuclear fuel<sup>1</sup> has been and is being generated and stored in the United States as part of commercial power generation. The accumulation of spent nuclear fuel from commercial power reactor operations in the United States probably will continue for several decades. There are 109 operating commercial facilities at 75 sites in 34 States where spent nuclear fuel is stored. By the year 2035, total spent nuclear fuel from power reactors will amount to about 85,000 metric tons of heavy metal (i.e., metric tons of heavy metal, typically uranium, without materials such as cladding, alloy and structural materials) (MTHM).

Spent nuclear fuel and high-level radioactive waste<sup>2</sup>, generated from

<sup>1</sup> Spent nuclear fuel is fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing.

<sup>2</sup> High-level radioactive waste is the highly radioactive material resulting from reprocessing of spent nuclear fuel. It includes liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient

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DOE's national atomic energy defense and research activities, are primarily located at DOE's Hanford Reservation, the Savannah River Site, and the Idaho National Engineering Laboratory. Other spent nuclear fuel, either currently in DOE possession or which may come under DOE possession, includes material from foreign research reactors, approximately 29 domestic university reactors, 5 non-DOE research reactors, and 4 "special case" reactors at non-DOE locations.

In 1982, in response to the continued accumulation of spent nuclear fuel and high-level radioactive waste, Congress passed the NWA. The purpose of the NWA was to establish geologic repositories that would provide reasonable assurance that the public and the environment would be adequately protected from the hazards posed by these materials. In 1987, Congress amended the NWA and directed DOE to evaluate the suitability of only the Yucca Mountain site in southern Nevada as a potential site for the first repository. If, based on this evaluation, the Secretary of Energy determines that the Yucca Mountain site is suitable, the Secretary may then recommend that the President approve the site for development of a repository.

Under the NWA, DOE is prohibited from emplacing more than 70,000 MTHM of spent nuclear fuel and high-level radioactive waste in the first repository until such time as a second repository is in operation. The current planning basis calls for 63,000 MTHM of commercial spent nuclear fuel to be disposed of in the first repository, proposed to be located at the Yucca Mountain site. The planning basis also calls for the disposal of 7,000 MTHM equivalent of DOE-owned spent nuclear fuel and high-level radioactive waste in this first repository.

#### Proposed Action

If the site were found to be suitable, the proposed action would be to construct, operate, and eventually close a repository at Yucca Mountain for the geologic disposal of up to 70,000 MTHM of commercial and DOE-owned spent nuclear fuel and high-level radioactive waste. Spent nuclear fuel and high-level radioactive waste would be disposed of in the repository in a subsurface configuration that would ensure its long-term isolation from the human environment. Repository construction, operation, and closure would be

concentrations and other highly radioactive material that the Nuclear Regulatory Commission, consistent with existing law, determines by rule requires permanent isolation.

governed by the Nuclear Regulatory Commission's licensing process.

Construction would begin if the Nuclear Regulatory Commission authorizes construction of the repository. Surface facilities would be designed and constructed to receive, and prepare for disposal, spent nuclear fuel and high-level radioactive waste that would arrive in transportation casks by highway and by rail. Capability to treat or package the secondary wastes generated during disposal operations would also be provided. Subsurface facilities would be designed and constructed for emplacement of spent nuclear fuel and high-level radioactive waste in disposal drifts. Subsurface facilities would primarily include access ramps, ventilation systems, disposal drifts, and equipment alcoves.

Disposal operations would begin once the Nuclear Regulatory Commission issues a license allowing receipt of spent nuclear fuel and high-level radioactive waste. Disposal operations would be expected to last up to 40 years, depending on shipment schedules. Disposal drifts would continue to be constructed during this time period as necessary. Spent nuclear fuel assemblies,<sup>3</sup> and canisters containing assemblies<sup>4</sup> or vitrified (i.e., solidified) high-level radioactive waste<sup>5</sup> would be shipped to the repository in transportation casks that meet the Nuclear Regulatory Commission and U.S. Department of Transportation requirements for shipping by truck or rail<sup>6</sup>. The assemblies would be removed from the transportation casks, which would be placed back into service after decontamination and maintenance or after necessary repairs were completed. Canisters and assemblies would be transferred to a "hot" cell—a room where remotely-controlled equipment would be used to place the material in disposal containers. These "waste packages" (i.e., assemblies and canisters

in disposal containers) would be transported underground in a transportation vehicle having radiation shielding for worker protection. Monitoring equipment, which would either be placed in selected drifts or would be mobile remote-sensing devices, would monitor performance of waste packages and aspects of the local repository geology.

The closure/post-closure period would begin after the Nuclear Regulatory Commission amends the license to authorize permanent closure. Underground equipment would be removed, repository openings would be backfilled and sealed, and the surface facilities would be decontaminated, decommissioned, and dismantled or converted to other uses. Institutional controls, such as permanent markers and monuments, would be designed and constructed to last thousands of years and discourage human activities that could compromise the waste isolation capabilities of the repository.

The disposal and closure/post-closure activities would be designed and implemented so that the combination of engineered (i.e., waste package and any backfill) and natural (geologic system) barriers would isolate the spent nuclear fuel and high-level radioactive waste. The combination of barriers would meet a standard to be specified by the Environmental Protection Agency, which has been entrusted to develop a radiation release standard pursuant to Section 801 of the Energy Policy Act of 1992 (42 U.S.C. § 10141 note); individual barriers would perform according to Nuclear Regulatory Commission requirements, including its performance objectives at 10 CFR 60.113. The engineered barrier must provide substantially complete containment of spent nuclear fuel and high-level radioactive waste for between 300 and 1,000 years by using corrosion resistant materials in the waste package.

Beyond 1,000 years, continued isolation would be assisted by features that would limit the rate at which radioactive components of the waste would be released. The rate of release would be substantially affected by natural conditions, the heat generation rate of spent nuclear fuel and high-level radioactive waste (i.e., thermal load), and its rate of heat dissipation. First, different thermal loads would affect directly the internal and external waste package temperatures, thereby affecting the corrosion rate and integrity of the waste package. Second, the heat would affect the geochemistry, hydrology, and mechanical stability of the disposal drifts, which in turn would influence the flow of groundwater and the

<sup>3</sup> A fuel assembly is made up of fuel elements held together by plates and separated by spacers attached to the fuel cladding.

<sup>4</sup> Under one scenario, spent nuclear fuel assemblies would be sealed in a multi-purpose canister that would then be inserted into separate casks/containers for storage, transportation, and disposal. Other canisters are available and include single-purpose systems, which require transferring of individual assemblies from one cask/container to another for storage, transport, and disposal. Another alternative would be dual-purpose systems which require storing and transporting individual assemblies in one cask and disposing of them in another container.

<sup>5</sup> Vitrified high-level radioactive waste would be sealed in canisters suitable for transport in a truck or train cask.

<sup>6</sup> Barges may also be used for intermodal shipments of spent nuclear fuel and high-level radioactive waste from generator sites to nearby locations for transfer to truck and rail.